REMARKS

Claims 1-5 remain pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks contained herein.

REJECTION UNDER 35 U.S.C. §112

Claims 1-5 stand rejected under 35 U.S.C. §112, first paragraph, as directed to non-enabled subject matter. The rejection is respectfully traversed.

The Examiner's allegation that the specification does not support "a heat exchanger coupled to the fuel cell for receiving waste heat from the housing" is not understood. As seen from Paragraph 18, page 4, of the specification, Applicants clearly explain that waste heat can be transferred by, for example, incorporating the cathode exhaust line 24 into an outer housing of the fuel cell. Additionally, originally submitted claim 1 called for "the housing adapted to transfer waste heat of the fuel cell".

Withdrawal of the rejection is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 102

Claims 1-4 stand rejected under 35 U.S.C. §102(e) as being anticipated by Xu (US 6,551,732). The rejection is respectfully traversed.

The Examiner's characterization of the Xu reference teaching use of a heat exchanger to make use of waste heat is simply not understood. Xu teaches feeding a substantial portion of the cathode effluent stream to a fuel processor as the oxygen containing gas and water vapor for converting the fuel stream into hydrogen. While Xu

discloses an air compressor upstream of the fuel cell cathode, there is no disclosure or suggestion of using fuel cell-produced waste heat to add heat to the cathode exhaust via a heat exchanger. Applicant has no argument with the Examiner's assertion that fuel cell reactions are known to be exothermic and generate excess heat. But what is not taught, claimed or suggested by Xu or the remaining prior art of record is to recover that waste heat emanating from the fuel cell housing and to thermally couple that heat energy to the cathode exhaust gas line, thereby rendering the fuel cell system more energy efficient. Applicants traverse the Examiner's characterization of "a heat exchanger coupled to the fuel cell for receiving waste heat from the housing of the fuel cell" as a recitation of the intended use of the claimed invention not entitled to patentable weight. That allegation is simply wrong. The limitation is directed to the nature of the coupling between the fuel cell and the heat exchanger. The prior art does not contemplate passing waste heat from a fuel cell to a heat exchanger for further utilization.

Xu contains no teaching or suggestion of taking waste heat from the housing of a fuel cell and transferring the waste heat energy to the cathode exhaust flow via a heat exchanger coupled between the fuel cell housing and the cathode exhaust gas line. Claim 1 and its depending claims 2-4 are therefore believed to be patentably distinguishable over Xu.

Claims 1-5 stand rejected under 35 U.S.C. §102(e) as being anticipated by Cownden et al (US 6,316,134). The rejection is respectfully traversed.

Again, the Examiner's characterization of Cownden et al is not understood. Cownden et al discloses a reformer, a fuel stream humidifier and a heat exchanger, all disposed within a furnace vessel associated with the fuel processing subsystem of a fuel

cell system. Cownden et al further discloses that the fuel processing subsystem may further comprise a shift reactor that exchanges heat for the cathode exhaust stream directed to the shift reactor from the power generation system. After passing through the shift reactor, the cathode exhaust stream is preferably directed to the furnace burner. All of this deals with Cownden's fuel processing system--not with an expander coupled to a compressor for the cathode input air pressurization.

As with Xu, Cownden et al contains no teaching or suggestion of taking waste heat from the housing of a fuel cell and transferring the waste heat energy to the cathode exhaust flow via a heat exchanger coupled between the fuel cell housing and the cathode exhaust gas line. Claims 1-5 are therefore believed to be patentably distinguishable over Cownden et al.

REJECTION UNDER 35 U.S.C. §103

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Xu in view of Cownden et al. The rejection is respectfully traversed.

Without acceding to the correctness of the Examiner's remarks thereover, claim 5 depends directly from claim 1 and is therefore believed to be in condition for allowance for at least the reasons set forth above with respect to claim 1.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested.

Respectfully submitted,

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